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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|------------------------|------------------|
| 10/695,991 | 10/30/2003 | Akio Maekawa | 244778US2 | 5666 |
| 22850 | 7590 | 01/12/2005 | EXAMINER | |
| OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314 | | | ESTREMSKY, SHERRY LYNN | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 3681 | |

DATE MAILED: 01/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/695,991

Applicant(s)

MAEKAWA, AKIO

Examiner

Sherry L Estremsky

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3681

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-5 and 7-11 is/are allowed.
- 6) ☒ Claim(s) 6 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 1-28-04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Specification

2. The abstract of the disclosure is objected to because it is too long and includes the phrase "is disclosed". Correction is required. See MPEP § 608.01(b).

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

3. The disclosure is objected to because of the following informalities: it appears "lager" in the third line from the bottom of page 1 should be --larger--;

The specification, including the claims, includes many instances of missing characters (mainly the letter "e"). For example, the paragraph beginning "A torque distribution" on page 1

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includes "torqu", "sub-driv", "whe ls" (two places), and "th " (instead of "the") and the first page of claims includes "sub-driv" in claims 1 and 2, "at l ast one" in claim 4.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 6 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In lines 1-2 of claim 6, "said torque distribution device" is indefinite because it lacks antecedent basis. It is not clear if this is referring to the torque distribution control device of claim 1.

In line 2 of claim 6, "an electromagnetic clutch" appears to be incorrectly claiming a second clutch in addition to the clutch already claimed in line 2 of claim 1. For the purpose of this action, claim 6 is assumed to be claiming that the clutch of claim 1 is an electromagnetic clutch.

Allowable Subject Matter

6. Claims 1-5 and 7-11 are allowed.

7. Claim 6 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

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8. The following is a statement of reasons for the indication of allowable subject matter:

No reference nor combination of references was found which teaches a torque distribution control device for a four-wheel drive vehicle having a torque distribution clutch controlled based on a command torque determined by the addition of a pre-torque based on vehicle speed, throttle opening degree, and a gear shift step of a transmission and a compensation torque based on a rotational speed difference between prime drive wheels and sub-drive wheels, as required by claim 1.

No reference nor combination of references was found which teaches a torque distribution control device for a four-wheel drive vehicle having a torque distribution clutch controlled based on a command torque determined by the addition of a pre-torque based on vehicle speed, throttle opening degree, and compensated the throttle opening degree and the acceleration/deceleration of the vehicle and a feedback torque based on a rotational speed difference between prime drive wheels and sub-drive wheels, as required by claim 7.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U. S. Patent 4,987,967 (Kouno) January 1991 - discloses a four-wheel drive vehicle transfer case in which two continuously variable transmissions are controlled according to calculations based on throttle angle, the gear stage, and the difference between the speeds of the front and rear wheel sets with the goal of harmonizing the speed difference between the two sets of wheels.

U. S. Patent 5,069,305 (Kobayashi) December 1991 - discloses a four-wheel drive vehicle transfer clutch which distributes torque to the sub-drive wheels by the maximum amount when

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the speed difference between the prime drive wheels and sub-drive wheels is greater than a predetermined value. If the difference is not greater than the predetermined value, the torque transmitted is determined according to the throttle angle, selected gear ratio, vehicle speed, and acceleration.

U. S. Patent 5,448,478 (Eto) September 1995 - discloses a torque distribution control device for a four-wheel drive vehicle which calculates various amounts of torques to be transmitted by the transfer clutch based on wheel set speed differences and a relationship between vehicle acceleration and throttle angle. The torque value among the various torques calculated is then selected and applied to the clutch.

U. S. Patent 6,347,271 (Showalter) February 2002 - discloses a torque distribution control device for a four-wheel drive vehicle which determines the transfer clutch pressure by sensing vehicle velocity and throttle angle, then calculating acceleration and the ratio of acceleration to throttle angle. If the ratio is not greater than a predetermined value, the clutch pressure is set according to throttle angle.

U. S. Patent 6,553,303 (Matsuno) April 2003 - discloses a torque distribution control device for a four-wheel drive vehicle including a pre-torque operation means for determining a pre-torque based on vehicle speed, throttle opening degree, and the gear shift step of a transmission and a compensation operation means for determining a compensation amount based on the speed difference between the prime and sub-drive wheels. A command torque determined by the multiplication of the pre-torque by the compensation amount (correction factor) is input to a torque transmission clutch.

U. S. Patent 6,697,725 (Williams) February 2004 - discloses a torque distribution control device for a four-wheel drive vehicle which uses vehicle speed, throttle, and gear range to calculate an actual acceleration of the vehicle at a given throttle angle, which is used to determine the torque to be transmitted by an electromagnetic transfer clutch with the goal of controlling the speed difference between the front and rear wheels.

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U. S. Patent 6,834,225 (Jiang et al.) December 2004 - discloses a torque distribution control device for a four-wheel drive vehicle which uses clutch slip, representing a difference in speed between the front and rear wheels, vehicle speed, throttle angle, and transmission status as factors in determining the torque to be transmitted by the clutch.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sherry L Estremsky whose telephone number is (703) 308-2164. The examiner can normally be reached on Tuesday and Friday from 7:30 a.m. to 6:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Marmor can be reached on (703) 308-0830. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SLE


SHERRY ESTREMSKY
PRIMARY EXAMINER
AU3681 1-7-05